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ABSTRACT

The Thiel Model for school site planning exemplifies a multidisciplinary approach to school site planning theory and a historical synthesis of seven decades of public school site planning research. The model relates the cause and effect relationships of the educational policy-making variables of economic, political, and social pressures to the school site variables of selection, planning and construction, and environment. The interaction of these variables has contributed to the current standards of public school site policy. Analyses of these current standards yielded 21 concepts of school site planning. Further extrapolation produced 10 principles of future school site policy. A flow chart schematic and outline description of the model is presented. (Author/MLF)

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PEDAGOGICAL SITE POLICY AND NEIGHBORHOOD QUALITY

by

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WRG is an educational consulting firm that promotes a philosophy that optimum learning environments are directly related to Research and Development Management.

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PEDAGOGICAL SITE POLICY AND NEIGHBORHOOD QUALITY

Public school site policy greatly influences the quality of life within existing neighborhoods. The essence of quality school site development rests with the implemented portion of a well-defined board of education policy.

--Russell E. Wilson

by

FRANK WILLIAM THIEL

and

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A source of pride in American communities has been the neighborhood school and its respective setting, the school site. Thousands of neighborhood schools have been designed and built in the United States and Canada with different educational specifications. In many cities, the school building simply over-powered the environment by consuming nearly all of the school site; thus, access to neighborhood green space was greatly limited. In other communities, school buildings have been set on large, open space sites with neighborhood residents having direct access to recreational and leisure activities.

The American public has become increasingly concerned with the quality of education its children are receiving. A quality educational measure is reflected in the physical setting, mainly being the school building and site. Currently, the importance of the 'built environment' including the redesign and renovation of educational facilities has gained national attention. Research is reflecting the importance of integrated environmental design brought about by quality neighborhood school settings. However, present-day school officials do not look beyond dollar cost figures in planning educational facility/on-site modernization. In essence, the desirable changes in school officials attitudes could be achieved if educational site policy included concepts and principles of multidisciplinary site planning research.

Presentation of the Thiel Model for School Site Planning

The writer presents the Thiel Model for school site planning which relates the cause and effect relationships of educational policy-making variables to the school site variables of selection, planning and construction, and environment. The interaction of these variables has contributed to the current standards of public school site policy. Analyses of these current standards yielded 21 concepts of school site planning. Further extrapolation produced 10 principles of future school site policy. As the concepts of school site planning and the principles of future school site policy are assimilated by school officials, a condition is produced for pedagogical decisions for future site standards and the

formation of public policy. This condition contributes to a higher level of public policy formation and practice in the educational administration of public school districts. A flow chart schematic and outline description of the Thiel Model for school site planning is presented in Figure 1.

Educational Policy-Making Variables

The development of society is directed by three primary humanistic pressures: economic, political, and social. As these three pressures change, divergent pressures are exerted upon society to alter its societal perspectives. Further, as these conditions continue to change, society demands that its technology meet new demands. An interesting dichotomy occurs: as conditions change, technology must meet new societal needs, the result being that accelerating technological development creates societal changes.

Economic Pressures

Economics of school site planning deals with the financial expenditures that are incurred by a school district when selecting and developing land. In new construction, school site expenditures increase as building cost overruns occur. Historically, development of features on the sites has been kept to a minimum to save money, the logic being that the site is the one area where development could be postponed for future years. In urban areas particularly, land costs and a paucity of desirable vacant land have forced school districts into accepting less desirable sites as the prohibitive costs of acquiring desirable "built up" land is dis-

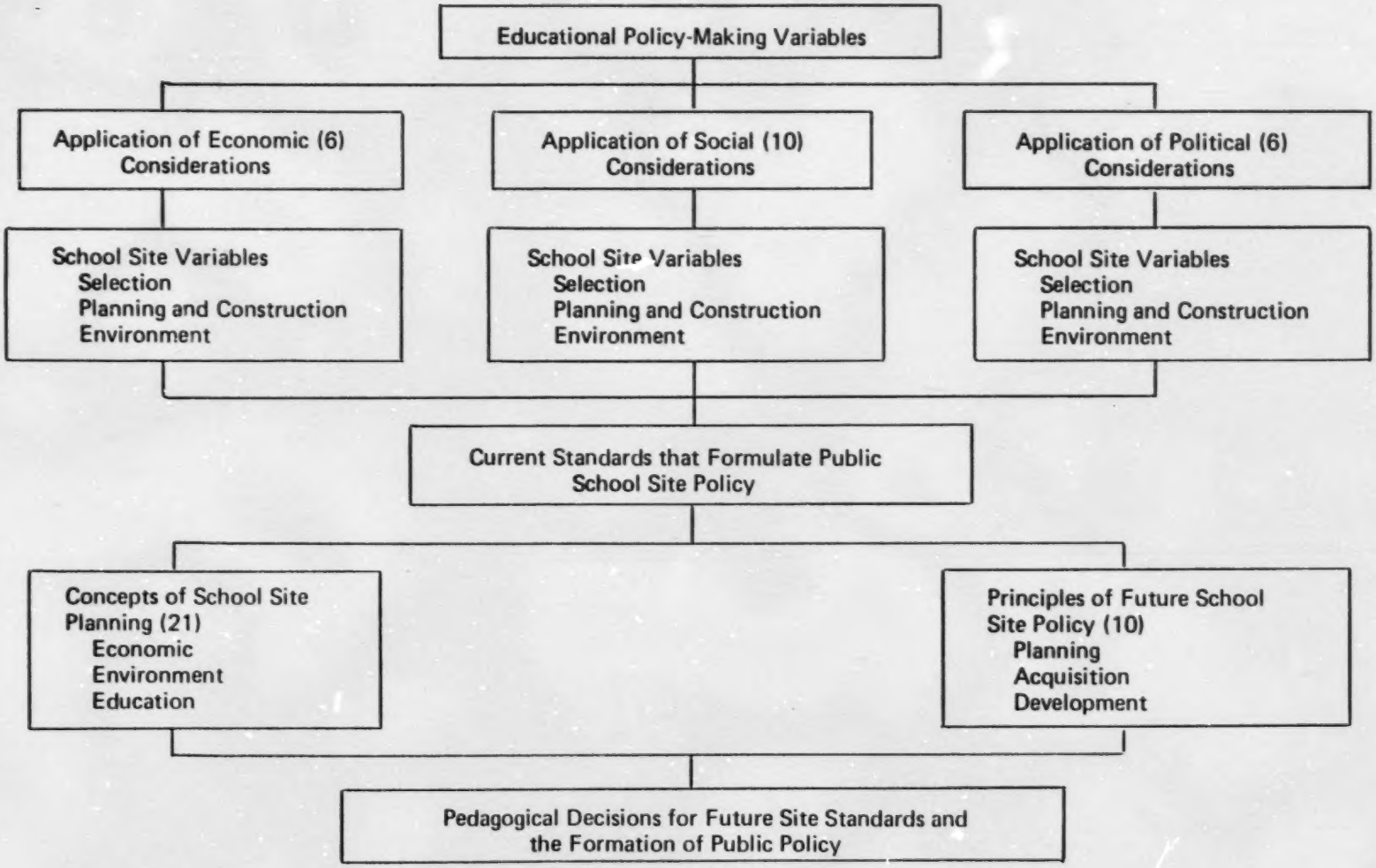

Fig. 1.--Thiel model for school site planning.

THIEL MODEL FOR SCHOOL SITE PLANNING

I.

Title: Education Policy-Making Variables.

Definition:

Three primary types of pressure that are exerted, producing standards and modifying reality.

Description:

I. Economics is the consideration of the cost associated with quality school sites.

II. Politics is the consideration of the pressures that can be brought about by local, state, and federal governments to alter the development of school sites.

III. Social is the consideration of the pressures that can be brought to bear by individuals, groups, experts, news media, etc.

II.

Title: School Site Variables

Definition:

Three primary areas where standards for school sites have been proposed and developed.

Description:

I. Selection of Site
   - A. Location of the Site
   - B. Walking Distances
   - C. Site Size
   - D. Site Purchase

II. Planning and Construction of the Site
   - A. Cooperative Planning
   - B. Actual Planning
   - C. Draining and Grading

III. Environment
   - A. Planting
   - B. Health and Safety
   - C. Playgrounds

III.

Title: Current Standards that Formulate Public School Site Policy

Definition:

These are the standards for school sites of the 1970s, which recognized experts recommended for public policy.

Description:

I. The work by the Council of Educational Facility Planners presents the site selection process.

   A. Who does it?
   B. When?
   C. What planning resources are available?

II. Criteria = Site Characteristics

III. Site Acquisition = How the Land is Obtained

IV. Site Development = How the Land can be Used to Its Fullest Advantage

V. The scorecard developed by Nicholaus L. Engelhardt provides the means by which several parcels of land under consideration can be evaluated.

IV.

Title: Pedagogical Decisions for Future Site Standards and the Formation of Public Policy

Definition:

These research areas present the foundation upon which society will be able to formulate future standards for school sites.

Description:

I. Concepts: The conceptual areas of economics, environment, and education are seen as the fundamental areas in which future standards will be derived.

II. Principles: The principles are direct developments of the conceptual area. The principles represent planning, acquisition, and development.

couraging. As the standards for site development become refined, the costs related to school sites increase.

Economic Considerations for School Sites

1. *Quality sites are expensive and should be viewed as investments, not expenditures.*
2. *Site expenditures should be based upon current school site standards.*
3. *A site should be selected that will be just as desirable in the future as it is when purchased.*
4. *The modernization of older sites makes an investment retain its value.*
5. *Landscaping can be used to solve costly environmental site problems.*
6. *School site development is directly affected by depression and inflation.*

Social Pressures

Social pressures as related to school sites deal with the effect of the input of people that are interested in the school site. Individuals or groups that have input into the development of school sites may have different motives than the best interests of students. Many standards of school site development are the direct result of the work by individuals and groups to improve the social conditions on school sites. Social pressures also refer to developments on the site that have effect on the school program.

Social Considerations for School Sites

1. *The health and welfare of children should be protected on the school site.*

2. *The client system prefers neighborhood schools if they have school-age children.*

3. *An attempt should be made to purchase sites with natural landscaping features.*

4. *If school sites with natural beauty are not available, features should be developed on the site.*

5. *School sites should be large enough to provide adequate space for all recreational activities, educational areas, and future growth.*

6. *Outdoor classrooms should be developed on sites to provide the educational experiences that can be learned only outdoors.*

7. *School sites should provide enjoyment for all ages.*

8. *The school site should reflect the needs and values of the community.*

9. *Social reform movements have altered the development of school sites.*

10. *The declining population across the nation has slowed the development of school sites.*

Political Pressures

Political pressures are initiated from members of formalized organizations on the local, state, and federal levels that have input on the development of standards related to school sites. All of these organizations can exert pressures on a school district to stop the purchase of a site, place restrictions on a site, or force the purchase of one site over another site. Political conditions also deal with the interplay of activities and personalities: the school board, administrators, teachers, students, parents, and the community. All of the aforementioned people play an important part in deciding how the school site will be selected and developed.

The political pressures that are developed locally have more effect on the resolution of a school site problem than political pressure from state and federal levels.

Political Considerations for School Sites

1. *The politics of public education are directly related to the client system and its satisfaction.*
2. *Quality school sites are supported by a client system that appreciates and understands the value and educational potential of school sites.*
3. *Reform movements often develop political problems for school districts.*
4. *Changes to the school site can be brought about through local, state, and federal politics.*
5. *Community involvement causes more problems for the school district than non-community involvement, but can produce far superior results.*
6. *War times bring about a pause in school site research and development.*

Application of Educational Policy-Making Variables to School Site Variables

In this stage of model development, the major trends derived from the research of the educational policy-making variables are contrasted to the school site variables of selection, planning and construction, and environment. The process of contrasting the two sets of variables produces current standards for school site policy formation.

Economic Pressures

1. *Quality sites are expensive and should be viewed as investments, not expenditures.*

Selection. It is far easier to select a quality site to begin with than to accept an inferior site and rank-order the standards for quality school sites. Quality real estate appreciates at a more rapid rate than inferior real estate.

Planning and Construction. A quality site requires a different type of planning than an inferior site. A quality site has mature site features. An inferior site has site features underdeveloped.

Environment. A quality site has a natural environment or the conditions exist to encourage plant growth on the site without extensive land preparation.

2. *Site expenditures should be based upon current school site standards.*

Selection. Individuals often select sites based upon the standards that were in practice when they attended school, not current acceptable standards for quality school sites.

Planning and Construction. The planning stage, if conducted properly by a landscape architectural firm, is not inexpensive but results in the school district saving thousands of dollars in the construction stage.

Environment. Landscaping costs do not have to be expensive, as many quality sites will already have natural features.

3. *A site should be selected that will be just as desirable in the future as it is when purchased.*

Selection. A quality site calls for environmental surroundings of high quality. This site retains its desirability, and therefore value, much longer than a site in an inferior neighborhood.

Planning and Construction. A poorly planned and constructed site can ruin the site desirability for future use.

Environment. One of the features that makes a site desirable is the presence of large mature trees. One of the quickest ways to decrease the desirability is to remove those trees.

4. *The modernization of older sites makes an investment retain its value.*

Selection. The selection of site to modernize requires as much forethought as the initial selection.

Planning and Construction. The ability to update a site without destroying its original quality aspects requires skillful planning and construction.

Environment. One of the positive features of older sites is mature trees. These should be saved at all cost. It makes no sense to destroy these amenities and replace with young, immature tree species.

5. *Landscaping can be used to solve costly environmental problems.*

Selection. A quality site has fewer environmental problems than an inferior site because of its location and on-site features.

Planning and Construction. A landscape architect can plan the site to take best advantage of the natural features to protect the building and recreational areas from snow, dust, noise, winds, and other environmental detriments.

Environment. By purchasing a site with a wind break, the school and site will realize immediate savings. The wind break

can be used to plan the placement of the school and recreation areas, instead of going through the costs involved in constructing a wind break to protect the school.

6. *School site development is directly affected by depression and inflation.*

Selection. Quality sites are less expensive during depressions, but usually there is limited money available for purchase. During inflationary conditions, the money is available but the site prices are greatly inflated.

Planning and Construction. Planning and construction tend to stop because the voters, many of whom are without jobs, cannot afford to pay for new schools. During inflationary times, planning and construction go on at a rapid rate. This may result from the fear that by waiting everything gets more costly.

Environment. During the depression of the 1930s gardening was taught as a regular part of the curriculum to aid people through rough times. During inflationary times more aesthetic considerations are required.

Social Pressures

1. *The health and welfare of children should be protected on the school site.*

Selection. When selecting a site, primary consideration should be the health and welfare of the child on the way to the site, at the site, and on the way home.

Planning and Construction. Planners have to avoid construct-

ing unattractive nuisances on school sites and thereby creating health and safety problems.

Environment. Every object on a school site is to some degree dangerous. It must be determined at what point an object is too dangerous to be allowed on the school site.

2. *The client system prefers neighborhood schools if they have school-age children.*

Selection. Young adults who expect or have elementary school children will purchase homes closer to an elementary school than will older adults with children of other age levels.

Planning and Construction. To attract more diversified age groups to purchase homes closer to the school, the site has to be planned and constructed to offer recreational facilities for all age groups.

Environment. The homes closest to the school are usually less expensive than similar homes a few blocks away. By creating a park-like environmental setting on a site, not only will older adults be attracted to the site, but home values will appreciate.

3. *An attempt should be made to purchase sites with natural landscaping features.*

Selection. Natural landscaping features are not always present on quality sites. All environmental standards should be considered when selecting a site.

Planning and Construction. The sites should be designed to protect natural landscaping features. All the planning in the

world has no value unless the necessary care and time are taken not to damage the natural features.

Environment. A site with mature trees has a 20 year head start on a barren site towards establishing a "green island."

4. *If school sites with natural beauty are not available, features should be developed on the site.*

Selection. If it is not possible to purchase a site with natural landscaping, then an attempt should be made to purchase a site including an area that could be so developed.

Planning and Construction. Urban school districts usually are not able to purchase sites with natural beauty. Through the use of selective plantings of hybrid growing trees, a few truck loads of soil and fertilizer, a natural, pleasant area can be developed in a few years.

Environment. An urban school site that has a natural area will have a positive effect upon the students, teachers, and the community. When the school and community express positive feelings about the site, the homes near the school become more desirable.

5. *School sites should be large enough to provide adequate space for all recreational activities, educational areas, and future growth.*

Selection. Urban schools have attempted to solve this problem on site size through condemnation, the right of first refusal, by buying available land near the school, rooftop playgrounds, using the air space above expressways, major bussing of students to open areas, and by other means, some reasonable, some outlandish. Urban

school sites should include as many different site features as their limited size will allow. Suburban school sites as well, for all their apparent "advantages," often develop with the same lack of imagination and disrespect for nature as urban schools.

Planning and Construction. Planning an urban school site requires a skillful landscape architect who is able to design a quality school site which relates to community values. When construction on an urban or suburban school site occurs, the saving of as many mature trees as possible should be a priority, depending on the number and location of trees on the site.

Environment. The asphalt paving and cyclone fence approach to landscaping will not create the same positive environment as the "green island" approach to landscaping.

6. *Outdoor classrooms should be developed on sites to provide the educational experiences that can be learned only outdoors.*

Selection. Many suburban schools are fortunate to have natural outdoor classrooms that are part of the existing site environment. When selecting a site, the criteria should include the potential for developing a natural area from the existing features on site.

Planning and Construction. The planning of outdoor classrooms requires an area of low traffic concentration, adequate sunlight, water, accessibility, educational potential and interesting features. The construction of these outdoor classrooms in a woods should only be limited in scope regarding safety problems, student "traffic problems" and other necessary educational features. On a

flat site and void of all growth, extensive land and selective plant development is required.

Environment. The "outdoor classroom" is not a place that duplicates the school room outside, but is a learning environment for students to appreciate nature and comprehend the delicate chain of events that, when broken, can cause destruction.

7. *School sites should provide enjoyment for all ages.*

Selection. A site should be selected that is large enough so that areas for all ages can be constructed on site.

Planning and Construction. Part of the reason sites were never designed to attract all ages was the lack of available space. As larger sites are being purchased, planned and constructed, separate areas attractive to all ages should be built.

Environment. A site that offers mature trees providing leafy shade and natural beauty for mothers with young children and for senior citizens can be more attractive than a sterile site with 10 newly planted trees. The more adults attracted to a site, the less vandalism will occur while the adults are present.

8. *The school site should reflect the needs and values of the community.*

Selection. A site committee for all interested parties should be established. Next, the positive and negative aspects of developing quality school sites can be presented and discussed. With a firm knowledge base, the committee should be able to determine the type of school site that should be selected.

Planning and Construction. A second committee or subcommittee could be formed, to recommend the features to be included into the plans for the site.

Environment. In order that the committee would understand standards of quality for the on-site environment, they should be shown pictures, slides, and video tapes, as well as be taken on field trips.

9. *Social reform movements have altered the development of school sites.*

Selection. The type of school site that was deemed acceptable 20 years ago is now being rejected as not meeting the standards for quality. The primary reason for the change is the reform movement that calls for development and full utilization of the school site.

Planning and Construction. In the past, planning of sites has been standardized but in a very limited and bland direction. The new standards attempt to create an attractive, inviting environment for the entire community.

Environment. Current reform movements have been very positive toward the environment, but in the future there could conceivably be a complete reversal in public thinking. That is why each reform movement should be logically evaluated on its own merits.

10. *The declining population across the nation has slowed the development of school sites.*

Selection. As school officials close schools they have to close the school which offers the fewest benefits to the community.

The decision on which school to close should include a review of the strengths and weaknesses of each site.

Planning and Construction. The strengths and weaknesses of each site will revolve around how well the site was planned and the construction executed.

Environment. The environment that each site creates in its community is a deciding factor when determining which school will be closed.

Political Pressures

1. *The politics of public education are directly related to the client system and its satisfaction.*

Selection. The site selected is usually the one to which the client system will have the least resistance. If a significant number of the client system is dissatisfied with the site, to the degree that a strong effective resistance movement is formed, the site will be sold.

Planning and Construction. A site should be planned and constructed to offer an attractive setting that will enhance the neighborhood. The facilities offered on a site should have a broad range of appeal to all segments and ages of a community.

Environment. If the environment "off site" endangers the health and safety of the child to a greater extent than normal, the school board may face the wrath of dissatisfaction from the client system.

2. *Quality school sites are supported by a client system that appreciates and understands the value and educational potential of school sites.*

Selection. A site that meets all the standards of a quality site may be unacceptable to the client system because of their limited frame of reference as to the features of quality school sites.

Planning and Construction. By including the client system in the decision-making process as school sites are being planned, a better site will be developed.

Environment. The client system has to be shown the monetary and aesthetic benefits that can be reaped through landscaping.

3. *Reform movements often develop potential problems for school districts.*

Selection. The problem that arises with proponents of reform is that they tend to narrow their demands. If they want all new sites in their district to have a certain feature, they want it immediately. They are not interested in submitting the concept to committee and having it reviewed, modified, and possibly rejected.

Planning and Construction. When planning new sites, space should be allocated for the development of their future uses. Planners must realize that by constructing an ultra-modern school site that follows the influence of a reform movement they are, in effect, dating the school and site.

Environment. There are many different companies and individuals vying with school districts for quality land with natural landscaping. Whether or not the school district purchases the land often depends on how much political pressure can be exerted.

4. *Changes to the school site can be brought about through local, state, and federal politics.*

Selection. Local politicians have the power to force school districts to alter their site selection. The state and federal politicians can withhold funds and programs.

Planning and Construction. The state suggests guidelines for the planning and construction of school sites.

Environment. The degree to which the federal and state politicians feel environmental programs are important on school sites determines the amount of funding that will be provided.

5. *Community involvement causes more problems for the school district than non-community involvement, but can produce far superior results.*

Selection. It is considerably easier to select and purchase a school site without involving the community, but this procedure may erode community support.

Planning and Construction. Community input is essential if the school district wishes to have the site used by the entire community.

Environment. A program of landscaping that involves the entire community, such as a program where community groups plant trees on site, will be supported and protected.

6. *War times bring about a pause in school site research and development.*

Selection. As a result of a decline in the birth rate, few new schools are required during war times.

Planning and Construction. It is difficult to plan for conditions that will exist after the war and the type of facilities those conditions will require.

Environment. Environmental programs should be continued on existing sites according to the master plan for each site.

Economic Site Planning Concepts

The first section of the concepts of school site planning is relegated to the field of economics. There are seven financial factors that have been documented as fundamental to the understanding of public school site planning design. Each of these financial factors has provided evidence that governing boards of education need to purchase larger, quality school sites. The seven economic concepts of school site planning are:

1. *Public tax expenditures in community land resources are investments, not costs.*
2. *Municipal service costs will be reduced with open space sites.*
3. *The ripple effect influences the attitudes of home buyers and sellers.*
4. *Multi-agency contracts result in substantial dollar savings.*
5. *School-park sites stabilize neighborhood property values.*
6. *Through the use of master site planning, renovated sites are self-liquidating projects.*
7. *Natural landscape features create additional property tax revenue.*

Economic Site Planning Concept 1

PUBLIC TAX EXPENDITURES IN COMMUNITY LAND RESOURCES ARE INVESTMENTS, NOT COSTS.

Capital improvement funds which are used to develop public school sites as community land resources are found to be dollar expenditures which are recoverable within a generation. Not only do these expenditures enhance the quality of the neightborhood, and improve the educational potential of the school site, but economically the neightborhood property tax base expands significantly, yielding additional tax revenue.

Economic Site Planning Concept 2

MUNICIPAL SERVICE COSTS WILL BE REDUCED WITH OPEN SPACE SITES.

Municipal tax expenditures for essential city services are directly related to acreage size of public school sites. If the size of the public school site is increased from one city block (four acres) to three city blocks (15 acres), two blocks of city streets are eliminated, resulting in substantial reduction of municipal overburden expenditures; and there is a decrease in the capital outlay for municipal services.

Economic Site Planning Concept 3

THE RIPPLE EFFECT INFLUENCES THE ATTITUDES OF HOME BUYERS AND SELLERS.

The ripple effect refers to the increasing dollar appreciation

of adjacent land parcels; occurring when certain types of buildings and site amenities are found in compatible combination. Depending on the degree and type of site development, public school sites have either a positive or a negative impact upon (1) the tax base for surrounding property, (2) the market value of residential housing and/or (3) the turnover in residential housing. All public school sites affect neighborhood property values as far away as five street crossings from the school building.

Economic Site Planning Concept 4

MULTI-AGENCY CONTRACTS RESULT IN SUBSTANTIAL DOLLAR SAVINGS.

Signing of contracts between boards of education and local, state, or federal government agencies regarding the planning, purchase or maintenance of public school sites results in substantial dollar savings.

Economic Site Planning Concept 5

SCHOOL-PARK SITES STABILIZE NEIGHBORHOOD PROPERTY VALUES.

A 15-acre neighborhood school park site will positively affect the market sales price of surrounding residential real estate. When the major land portion of a school site is developed to the maximum for educational, recreational and community use, the result is higher property tax revenue.

Economic Site Planning Concept 6

THROUGH THE USE OF MASTER SITE PLANNING, RENOVATED SITES ARE SELF-LIQUIDATING PROJECTS.

When small, limited space school sites are enlarged and renovated, conditions are created for recapitalization of initial capital expenditures. Optimally developed land resources for neighborhood residents leads to this recapitalization of monies invested in new land, planning costs, and site development expenses.

Economic Site Planning Concept 7

NATURAL LANDSCAPE FEATURES CREATE ADDITIONAL PROPERTY TAX REVENUE.

Certain environmental resources on the school site contribute to an expanded property tax revenue base. These natural landscape features include water resources, a variety of vegetation, coniferous and deciduous trees, variations in the terrain, and microhabitats for wildlife propagation. Such resources are instrumental in appreciating the market value of surrounding residential real estate, resulting in collection of additional property tax revenues.

Environmental Site Planning Concepts

There are seven environmental concepts that have been grouped together to provide the argument for either purchasing a site with natural beauty, or developing the natural beauty on the

site. Each of these environmental concepts provides the basis for the development of school site standards.

The seven environmental concepts of school site planning are:

1. *Master land use principles should be applied to the purchasing of school sites.*
2. *By developing "green islands" on site, an enjoyable atmosphere is created.*
3. *Biosphere improvements create global environmental quality living standards.*
4. *School site landscaping should attempt to blend the natural and built environments together.*
5. *Aerial photogrammetric methods produce high quality contour maps.*
6. *School site runoff water can be used for site irrigation.*
7. *The aesthetics of the school site must be carefully planned to create the psychological and anthropological effects of beauty.*

Environmental Site Planning Concept 1

MASTER LAND USE PRINCIPLES SHOULD BE APPLIED TO THE PURCHASING OF SCHOOL SITES.

Public school districts can contribute to the establishment of ecologically balanced open space systems which reflect an integrated land use pattern for the urban and regional environments, by acquiring high quality ecological value school sites. These community land resources should be selected by applying master land use planning principles.

Environmental Site Planning Concept 2

BY DEVELOPING "GREEN ISLANDS" ON SITE, AN ENJOYABLE ATMOSPHERE IS CREATED.

The scientific application of living, breathing plant material to public school sites can alter the adverse effects of an uncomfortable, uniform, local climate. Green island school sites contribute to a more pleasant and livable environment for man by intercepting precipitation and solar radiation and through controlling wind and temperature variations.

Environmental Site Planning Concept 3

BIOSPHERE IMPROVEMENTS CREATE GLOBAL ENVIRONMENTAL QUALITY LIVING STANDARDS.

The design and ecological development of a school site contributes to an enhanced global medium for living, breathing plant and animal life. The site contributes to the formation of water molecules for the purification of the atmosphere. Its plants absorb ample supplies of sun energy for photosynthetic process production by providing oxygen and carbon dioxide for the replenishment of the atmosphere.

Environmental Site Planning Concept 4

SCHOOL SITE LANDSCAPING SHOULD ATTEMPT TO BLEND THE NATURAL AND BUILT ENVIRONMENTS TOGETHER.

Creative educational site and facility architecture combines

program function and aesthetics to achieve a design configuration which imparts the psychological feeling that the educational facility is a natural extension of the school site environment. This unity of site and facility design is a unique blend of the natural and man-made environment.

Environmental Site Planning Concept 5

AERIAL PHOTOGRAMMETRIC METHODS PRODUCE HIGH QUALITY CONTOUR MAPS.

The application of aerial photogrammetric methods, field engineering vertical and horizontal land reference points and computer scanning techniques yields a two foot contour map of 640 acres (one square mile), including coniferous and deciduous vegetation zones. This technology allows planners to acquire high quality contour maps for a fraction of the cost compared with traditional field engineering contour mapping.

Environmental Site Planning Concept 6

SCHOOL SITE RUNOFF WATER CAN BE USED FOR SITE IRRIGATION.

The collection and recycling of all water which falls on the school site watershed for purposes of sub-surface irrigation, sub-soil recharging, and aquatic development of water resource reservoir.

Environmental Site Planning Concept 7

THE AESTHETICS OF THE SCHOOL SITE MUST BE CAREFULLY PLANNED TO CREATE THE PSYCHOLOGICAL AND ANTHROPOLOGICAL EFFECTS OF BEAUTY.

The creation of aesthetics which reflect the psychological and anthropological effects of beauty on a school site is a landscape architecture design achievement. Site design that inspires must be carefully planned.

Educational Outcomes of Site Planning

There are seven concepts related to the educational outcomes on school site. They are as follow:

1. *An educational site policy is a guideline for school and community land resources.*
2. *Natural land should become outdoor classrooms on school sites.*
3. *Land everywhere holds vestiges of man's previous uses.*
4. *A natural land resources inventory determines the educational potential of the land.*
5. *Interdisciplinary educational planning occurs when various agencies become involved with the school site project.*
6. *Children's play environs should be designed for optimal potential growth.*
7. *Educational site specifications are written statements of program requirements.*

Educational Outcomes of Site Planning Concept 1

AN EDUCATIONAL SITE POLICY IS A GUIDELINE FOR SCHOOL AND COMMUNITY LAND RESOURCES.

The educational site policy is a written document representing

the guidelines for site selection, acquisition, design, development, management, and maintenance of public school lands. These guidelines comprise the official public statement of the board of education and formulate the basis for educational and community program development of the land.

Educational Outcomes of Site Planning Concept 2

NATURAL LAND SHOULD BECOME OUTDOOR CLASSROOMS ON SCHOOL SITES.

Natural areas of school sites or adjoining school-owned lands become outdoor classrooms when utilized for instructional purposes. The degree of formal development of each outdoor classroom varies according to the demands of the educational program. Instructional areas range from woodlots, nature trails, school farms and forests, to scattered stump fields, natural amphitheaters, and formal landscaping.

Educational Outcomes of Site Planning Concept 3

LAND EVERYWHERE HOLDS VESTIGES OF MAN'S PREVIOUS USES.

Vestiges of man's occupation include material objects found on or in the land and the records of its purchase, sale, and use.

Educational Outcomes of Site Planning Concept 4

A NATURAL LAND RESOURCES INVENTORY DETERMINES THE EDUCATIONAL POTENTIAL OF THE LAND.

The natural land resource inventory of the school site is pre-

pared by site specialists and constitutes the initial phase of school site development projects. The inventory is a comprehensive written document, including graphic mapping techniques which detail the natural and man-made amenities of the school site. Inclusive within the inventory are the physical planning constraints placed upon the site by law and/or existing resources.

Educational Outcomes of Site Planning Concept 5

INTERDISCIPLINARY EDUCATIONAL PLANNING OCCURS WHEN VARIOUS AGENCIES BECOME INVOLVED WITH THE SCHOOL SITE PROJECT.

Educational site planning assumes interdisciplinary perspective when the services and technological assistance of local, state, and federal agencies and organizations are involved. It is not enough to simply utilize land resource agency expertise. A representative sample of community members must actively participate if there is to be (1) understanding of the interpretations that the economist, sociologist, ecologist, or engineer provide for the site development project and if there is to be (2) political commitment for implementing the master site development plan.

Educational Outcomes of Site Planning Concept 6

CHILDREN'S PLAY ENVIRONS SHOULD BE DESIGNED FOR OPTIMAL POTENTIAL GROWTH.

The school site environment which generates optimal potential growth conditions for younger children is best achieved by designing individualized play areas. These areas should be based upon

both informal and formal play related activities. These play environments allow for a variety of physical and psychological responses from children based upon age level grouping. Play space environs should provide stimulating, responsive, creative experiences for children.

Educational Outcomes of Site Planning Concept 7

EDUCATIONAL SITE SPECIFICATIONS ARE WRITTEN STATEMENTS OF PROGRAM REQUIREMENTS.

The written educational document presented to the architect and/or landscape architect designates the educational program requirements of land. These educational program statements are written by the professional staff to insure that (1) the educational process and instructional program is interrelated and that (2) creative architecture and landscape architecture design is promoted on the site.

Principles of Future School Site Policy

The formation of educational policy in the United States is a product of a set of foundation principles consistent with the goals and objectives of public school education. The strength of an educational system can be measured by evaluating its written educational program which in part is represented with a series of principles of educational policy as related to the cadre of services and programs provided.

These principles of future school site policy are derived

from the interaction of the concepts of school site planning and the current standards that formulate public school site policy. The 10 principles are subdivided into the areas of planning (3), acquisition (3), and development (5). A definition of each principle is provided for the reader.

The principles from which the formation of future educational site policy and public school site standards should evolve are listed below:

Planning Principles of Future School Site Policy

1. *Comprehensive Planning*
2. *Cooperative Planning*
3. *Coordination of Site and Building Development*

Acquisition Principles of Future School Site Policy

4. *Acquisition of Size Beyond Immediate Expectations*
5. *Acquisition of Land with Topographical Variety and Interest*

Development Principles of Future School Site Policy

6. *Development to Maximize Safety*
7. *Development to Enhance Climate and Terrain*
8. *Development to Delight and Protect Adjacent Property Owners*
9. *Development to Maximize Recreational Impact*
10. *Development to Optimize Educational Impact*

Principles of Future School Site Policy

COMPREHENSIVE PLANNING

Comprehensive planning successfully conducted will maximize the

site planning concepts related to the realms of economics, environment, and education. It is the overall planning from beginning to end that should be conducted before any site is even considered. Comprehensive planning is a series of thoroughly thought-out steps that determine everything from the initial study for the need for purchasing a site to maintenance of the site after all the planning and construction is finished.

COOPERATIVE PLANNING

Cooperative planning is the principle involving a wide range of specialists (architects, landscape architects, city planners, recognized experts, and others) and on the other hand, the involvement of representatives from all the likely client systems: school administrators, children, parents and local interest groups.

COORDINATION OF SITE AND BUILDING DEVELOPMENT

The coordination of site and building development is the fundamental aspect that maximizes the educational, environmental, and economic aspects of a school site program. Other sites with outstanding educational potential are ruined because of faulty coordination and questionable construction practices.

Acquisition Principles of Future School Site Policy

ACQUISITION OF SIZE BEYOND IMMEDIATE EXPECTATIONS

The principles of acquisition of size beyond immediate expecta-

tion is primarily a safeguard feature for the future. The difficulty of purchasing 10 to 20 percent more land at the outset is easily accomplished as compared to land acquisition after the space around the site has been developed. The additional land should be located so that if the school were closed, or the land became obviously unnecessary, it could be recycled and most likely a sizable profit made.

ACQUISITION OF LAND WITH TOPOGRAPHICAL VARIETY AND INTEREST

The acquisition of land of topographical variety and interest is the concept of purchasing land with natural amenities that would interest children, be worthwhile for study, and could have a pleasant environment for the entire community. A general rule of thumb is if a site could be a park it could be acceptable for a school site.

Development Principles of Future School Site Policy

DEVELOPMENT TO MAXIMIZE SAFETY

Development to maximize safety is the principle whereby every feature of the site is designed with the health and welfare of the site users. The site provides suitable ingress and egress pathways accompanied by definitive landscape zones for site activities.

DEVELOPMENT TO ENHANCE CLIMATE AND TERRAIN

The enhancement of the climate and terrain is the principle

related to the improvement of the micro-climates on the school site. This is accomplished through the skillful placement of earth and planting to ameliorate climate and enhance terrain.

DEVELOPMENT TO DELIGHT AND PROTECT ADJACENT PROPERTY OWNERS

The development to provide pleasure and protection for adjacent property owners is the principle that contributes to making the neighborhood school a source of pride and a desirable location for a home. This is the principle that provides for a safe "green island" park site rather than a flat dull site.

DEVELOPMENT TO MAXIMIZE RECREATIONAL IMPACT

The principle to maximize recreational opportunities states that recreational facilities should reflect the clients that they serve and provide a wide range of activities for the enjoyment of all age groups.

DEVELOPMENT TO OPTIMIZE EDUCATIONAL IMPACT

The principle to optimize the educational impact of the school site imparts the idea that learning occurs in all environments--on the public school site, inside the educational facility, within the neighborhood environ. In order to develop the optimum growth and development patterns for children and client groups, public school sites need to be developed educationally for maximum transfer of knowledge.

Concluding Thought

The Thiel Model for school site planning exemplifies a multi-disciplinary approach to school site planning theory and a historical synthesis of seven decades of public school site planning research. Hopefully, its contribution to the discipline of educational administration can be found in future years with a higher level of educational administrative practice than exists today.

Thiel, Frank William. "The Effect Of Public School Site Variables Of Selection, Planning And Construction, And Environment Upon The Formation Of Educational Policy-Making In The United States From 1900 Through 1970." Ph.D. dissertation, The University of Michigan, 1980.

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